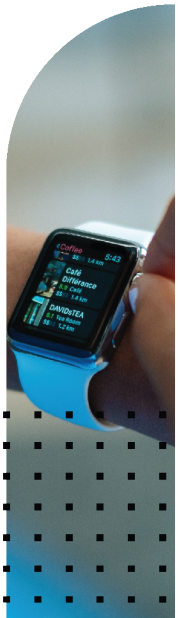
VMware Administration Guide

FortiAuthenticator 6.4.0



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December 6, 2022
FortiAuthenticator 6.4.0 VMware Administration Guide
23-640-734879-20221206

TABLE OF CONTENTS

Change Log

Date	Change Description
2021-08-05	Initial release.
2021-09-08	Updated FortiAuthenticator-VM console access on page 24.
2022-12-06	Updated System requirements on page 8.

Introduction

FortiAuthenticator-VM is a virtual appliance designed specifically to provide authentication services for multiple devices, including firewalls, SSL and IPsec VPNs, wireless access points, switches, routers, and servers. FortiAuthenticator includes a RADIUS, TACACS+ and LDAP server. Authentication servers are an important part of an enterprise network, controlling access to protected network assets, and tracking users' activities to comply with security policies.

FortiAuthenticator is not a firewall; it requires a FortiGate appliance to provide firewall-related services. Multiple FortiGate units can use a single FortiAuthenticator appliance for Fortinet Single Sign On (FSSO) and other types of remote authentication, two-factor authentication, and FortiToken device management. This centralizes authentication and FortiToken maintenance.

FortiAuthenticator provides an easy-to-configure remote authentication option for FortiGate users. Additionally, it can replace the FSSO Agent on a Windows AD network.

Whilst FortiAuthenticator is a hardened server it should be installed with adequate protection from the Internet. Management protocols should be configured on private networks and only the resources required exposed to the outside.

The FortiAuthenticator-VM delivers centralized, secure two-factor authentication for a virtual environment with a stackable user license for the greatest flexibility. Supporting from 100 to 1 million+ users, the FortiAuthenticator-VM supports the widest range of deployments, from small enterprise right through to the largest service provider.

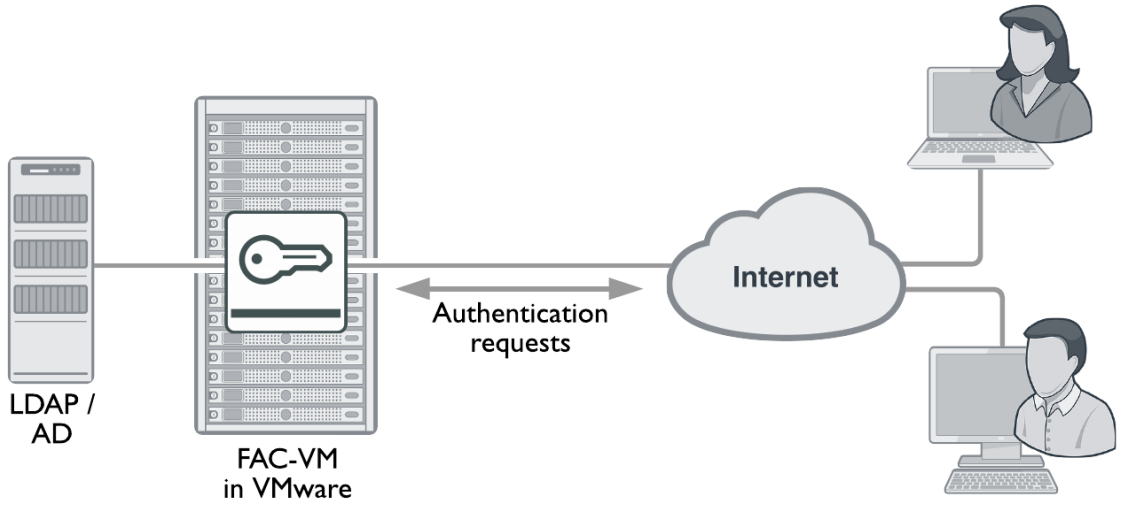
Failure to protect the FortiAuthenticator may result in compromised authentication databases.

This document includes an overview of the FortiAuthenticator-VM, its deployment with VMware vSphere, and information on how to perform an initial configuration.

Architecture

FortiAuthenticator-VM is a virtual appliance version of FortiAuthenticator. It is deployed in a virtual machine environment.

Once the virtual appliance is deployed and set up, you can manage FortiAuthenticator-VM via its GUI in a web browser on your management computer.



FortiAuthenticator-VM requires the following connectivity for management. Inbound management using Telnet and HTTP is not recommended. SSH is intended for initial configuration and diagnostics only. For more information, see the FortiAuthenticator Administration Guide.

Inbound management:

Service	Port
Telnet	TCP 23
HTTP	TCP 80
HTTPS	TCP 443
SSH	TCP 22

Outbound management:

Service	Port
DNSlookup	UDP 53
NTP	UDP 123
FortiGuard Licensing	TCP 443 (required for initial token registration)
Log Export (FTP)	TCP 21

FortiAuthenticator-VM Overview

This section provides an overview of FortiAuthenticator-VM.

The following topics are included in this section:

Licensing

Fortinet offers the FortiAuthenticator-VM in a stackable license model. This model allows you to expand your VM solution as your environment expands. When configuring your FortiAuthenticator-VM, make sure to configure hardware settings as outlined in table three and consider future expansion. Contact your Fortinet Authorized Reseller for more information.

FortiAuthenticator-VM license options:

SKU	Description
FAC-VM-Base	Base FortiAuthenticator-VM with 100 user licenses. Unlimited vCPU.
FAC-VM-100-UG	FortiAuthenticator-VM with 100 user license upgrade.
FAC-VM-1000-UG	FortiAuthenticator-VM with 1,000 user license upgrade.
FAC-VM-10000-UG	FortiAuthenticator-VM with 10,000 user license upgrade.
FAC-VM-100000-UG	FortiAuthenticator-VM with 100,000 user license upgrade.

Note that the FAC-VM-Base license is always required and that other licenses are upgrades to the base license.

Virtualization environment supported:

- VMware ESXi 4/5/6

FortiAuthenticator-VM support options:

SKU	Description
FC1-10-0ACVM-248-02-12	1 Year 24x7 FortiCare Contract (1 - 500 USERS)
FC2-10-0ACVM-248-02-12	1 Year 24x7 FortiCare Contract (1 - 1100 USERS)
FC3-10-0ACVM-248-02-12	1 Year 24x7 FortiCare Contract (1 - 5100 USERS)
FC4-10-0ACVM-248-02-12	1 Year 24x7 FortiCare Contract (1 - 10100 USERS)
FC8-10-0ACVM-248-02-12	1 Year 24x7 FortiCare Contract (1 - 25100 USERS)
FC5-10-0ACVM-248-02-12	1 Year 24x7 FortiCare Contract (1 - 50100 USERS)
FC6-10-0ACVM-248-02-12	1 Year 24x7 FortiCare Contract (1 - 100100 USERS)
FC9-10-0ACVM-248-02-12	1 Year 24x7 FortiCare Contract (1 - 500100USERS)
FC7-10-0ACVM-248-02-12	1 Year 24x7 FortiCare Contract (1 - 1M USERS)

FortiAuthenticator-VM license information:

Technical Specification	VM-BASE	VM-100-UG	VM-1000-UG	VM-10000-UG	VM-100000-UG
Virtual CPUs (Maximum)	64				
Virtual Interfaces (Min / Max)	1 / 4				
Virtual Memory (Min / Max)	2GB / 1TB				
Virtual Storage (Min / Max)	60GB / 16TB				
High Availability	Yes (Active-Passive HA and Config Sync HA)				

Note: For information on the maximum number of configuration objects that can be added to the configuration database for different FortiAuthenticator virtual machine (VM) configurations, see the *FortiAuthenticator 6.4 Release Notes* on the Fortinet Docs Library.

After placing an order for FortiAuthenticator-VM, a license registration code is sent to the email address used in the order form. Use the license registration code provided to register the FortiAuthenticator-VM with FortiCloud.

Upon registration, you can download the license file. You will need this file to activate your FortiAuthenticator-VM. For more information on configuring basic network settings and applying your license, see the FortiAuthenticator Administration Guide.

System requirements

Prior to deploying the FortiAuthenticator-VM virtual appliance, your virtual machine manager must be installed and configured. The installation instructions for FortiAuthenticator-VM assume you are familiar with both VM platforms and their related terminology. FortiAuthenticator-VM includes support for:

- VMware ESXi / ESX 6/7/8

For the latest information on virtualization software support, see the corresponding *FortiAuthenticator Release Notes* on the Fortinet Docs Library.

Upgrade to the latest stable server update and patch release.

VM requirements

The following table provides a detailed summary on FortiAuthenticator virtual machine (VM) system requirements. Installing FortiAuthenticator-VM requires that you have already installed a supported VM environment.

Virtual machine	Requirement
VM form factor	Open Virtualization Format (OVF)
Virtual CPUs supported (minimum / maximum)	1 / 64
Virtual NICs supported (minimum / maximum)	1 / 4
Storage support (minimum / maximum)	60 GB / 16 TB
Memory support (minimum / maximum)	2 GB / 1 TB
High Availability (HA) support	Yes

FortiAuthenticator-VM sizing guidelines

The following table provides FortiAuthenticator-VM sizing guidelines based on typical usage. Actual requirements may vary based on usage patterns.

Users	Virtual CPUs	Memory	Storage*
1 - 500	1	2 GB	1 TB
500 to 2,500	2	4 GB	1 TB
2,500 to 7,500	2	8 GB	2 TB
7,500 to 25,000	4	16 GB	2 TB
25,000 to 75,000	8	32 GB	4 TB
75,000 to 250,000	16	64 GB	4 TB
250,000 to 750,000	32	128 GB	8 TB
750,000 to 2,500,000	64	256 GB	16 TB
2,500,000 to 7,500,000	64	512 GB	16 TB

*1TB is sufficient for any number of users if there is no need for long-term storage of logs onboard FortiAuthenticator.

Register FortiAuthenticator-VM on FortiCloud

To obtain the FortiAuthenticator-VM license file you must first register your FortiAuthenticator-VM on FortiCloud.

To register your FortiAuthenticator-VM:

1. Go to the FortiCloud portal and create a new account or log in with an existing account.
2. In *Asset Management*, select *Register Product*, or click the *Register More* button.
3. Provide your registration code:
   a. Enter your product serial number, service contract registration code, or license certificate number.
   b. Choose your end user type as either a government or non-government user.
   c. Click *Next*.
4. Specify your registration information:
   a. If you have purchased a support contract for your product, enter the support contract.
   b. Enter a description to help identify the product.
   c. Enter the IP address of the FortiAuthenticator VM.
   d. Select a *Fortinet Partner*.
   e. Specify the asset group.
   f. Click *Next*.

As a part of the license validation process, FortiAuthenticator-VM compares its IP address with the IP information in the license file. If a new license has been imported or the FortiAuthenticator-VM's IP address has been changed, the FortiAuthenticator-VM must be rebooted in order for the system to validate the change and operate with a valid license.

FortiCloud does not currently support IPv6 for FortiAuthenticator-VM license validation. You must specify an IPv4 address in both the support portal and the port management interface.

5. The *Fortinet Product Registration Agreement* page displays. Select the check box to indicate that you have read, understood, and accepted the service contract. Click *Next*.
6. The *Verification* page displays. Select the checkbox to indicate that you accept the terms. Click *Confirm*. Registration is now complete and your registration summary is displayed.
7. On the *Registration Complete* page, download the license file (`.lic`) to your computer. You will upload this license to activate the FortiAuthenticator VM.

To edit the FortiAuthenticator-VM IP address:

1. In *Asset Management*, go to *Product List*.
   The *View Products* page opens.
2. Select the FortiAuthenticator-VM serial number.
3. In the *Product Information* pane, Select *Edit* to change the description, partner information, and IP address of your FortiAuthenticator-VM.
   The *Edit Product Information* page opens.

4. Enter the new IP address and select *Save*.

You can change the IP address five (5) times on a regular FortiAuthenticator-VM license. There is no restriction on a full evaluation license.

5. Select the *License File Download* link. You will be prompted to save the license file (`.lic`) to your management computer.

Download the FortiAuthenticator-VM software

Fortinet provides the FortiAuthenticator-VM software for 64-bit environments in two formats:

Upgrades: Download this firmware image to upgrade your existing FortiAuthenticator-VM installation.

- FAC_VM-vxxx-build0xxx-FORTINET.out:

New Installations: Download for a new FortiAuthenticator-VM installation.

- FAC_VM-vxxx-build0xxx-FORTINET.out.ovf.zip

For more information see the FortiAuthenticator product datasheet available on the Fortinet web site.

VMware ESXi deployment package contents

The **FAC_VM-vxxx-buildxxxx-FORTINET.out.ovp.zip** file contains:

- datadrive.vmdk: The FortiAuthenticator-VM log disk in VMDK format.
- fac.vmdk: The FortiAuthenticator-VM system hard disk in VMDK format.
- FortiAuthenticator-VM.ovf: OVF template file for the highest supported VMware hardware type (intel E1000 NIC Driver). To find out the hardware type of your OVF template, open the file with a text editor, and search vssd:`VirtualSystemType`.
- FortiAuthenticator-VM.hwXX.ovf: OVF template file for VMware Hardware Type XX (intel E1000 NIC Driver).

For compatibility of your VMware ESXi/ESX server and the various hardware types, see ESXi/ESX hosts and compatible virtual machine hardware versions list (2007240).

The FAC_VM-vxxx-build0xxx-FORTINET.out.ovf.zip file contains the following files:

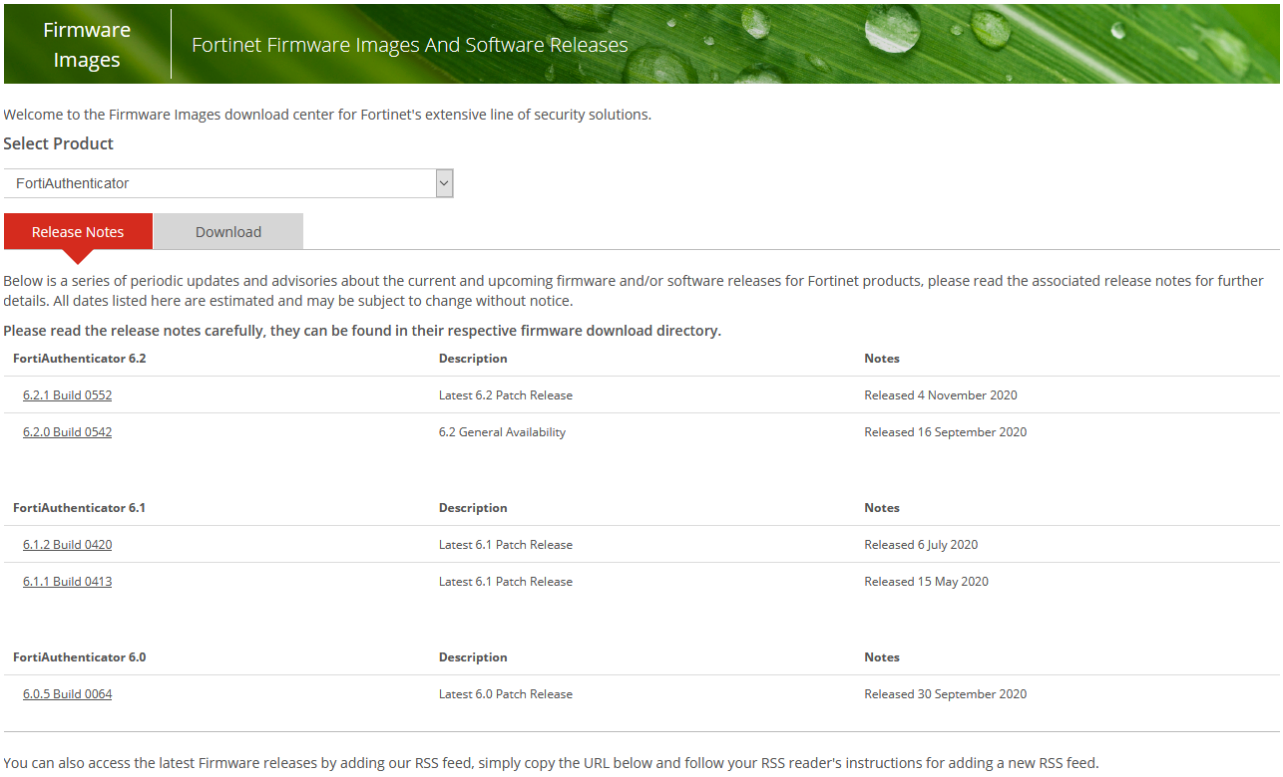
- datadrive.vmdk: Virtual machine disk format file used by the OVF file.
- fac.vmdk: Virtual machine disk format file used by the OVF file.
- FortiAuthenticator-VM.hw04.ovf: Open Virtualization Format file for VMware ESX 4.0 environments that support hardware version 4.
- FortiAuthenticator-VM.hw07.ovf: Open Virtualization Format file for VMware ESX 4.0 environments that support hardware version 7.
- FortiAuthenticator-VM.hw10.ovf: Open Virtualization Format file for VMware ESX 4.0 environments that support hardware version 10.
- FortiAuthenticator-VM.hw13.ovf: Open Virtualization Format file for VMware ESX 4.0 environments that support hardware version 13.
- FortiAuthenticator-VM.ovf: Open Virtualization Format file for VMware.

FortiAuthenticator-VM firmware images in the FortiCloud FTP directory are organized by firmware version, major release, and patch release. The firmware images in the directories follow a specific naming convention and each firmware image is specific to the device model. For example, the FAC_VM-v300-build0004-FORTINET.out.ovf.zip image found in the v3.0 directory is specific to the FortiAuthenticator-VM VMware environment.

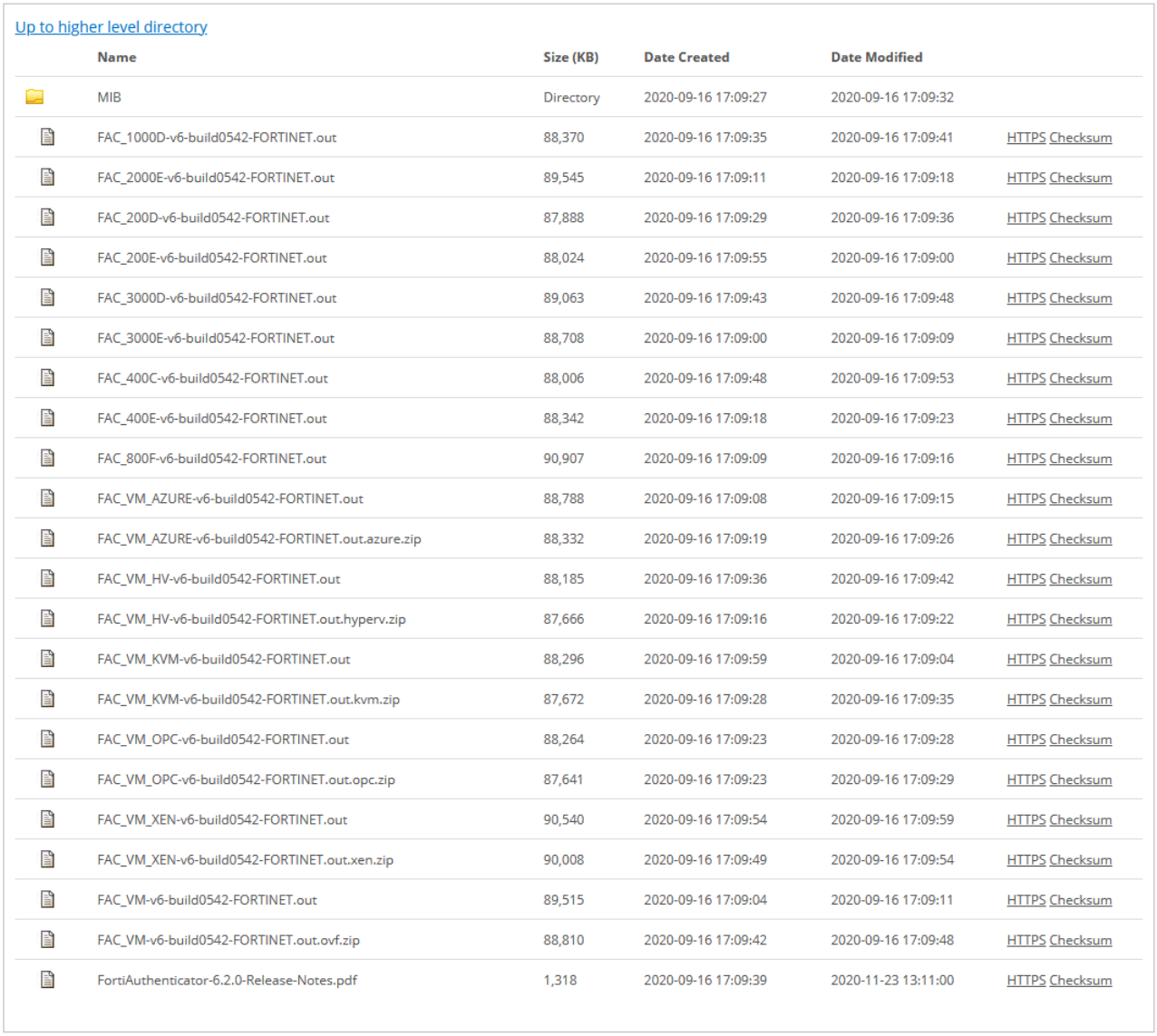
You can download the FortiAuthenticator Release Notes available on the Fortinet web site.

To download the FortiAuthenticator-VM .zip package:

1. Log into FortiCloud, select *Download* in the toolbar, and select *Firmware Images* from the dropdown list.
   The *Firmware Images* page opens.



2. In the *Firmware Images* page, select **FortiAuthenticator**.
3. On the *Download* tab, browse to the appropriate directory in the FTP site for the version that you would like to download.



Up to higher level directory

Name	Size (KB)	Date Created	Date Modified	
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FAC_1000D-v6-build0542-FORTINET.out	88,370	2020-09-16 17:09:35	2020-09-16 17:09:41	HTTPS Checksum
FAC_2000E-v6-build0542-FORTINET.out	89,545	2020-09-16 17:09:11	2020-09-16 17:09:18	HTTPS Checksum
FAC_200D-v6-build0542-FORTINET.out	87,888	2020-09-16 17:09:29	2020-09-16 17:09:36	HTTPS Checksum
FAC_200E-v6-build0542-FORTINET.out	88,024	2020-09-16 17:09:55	2020-09-16 17:09:00	HTTPS Checksum
FAC_3000D-v6-build0542-FORTINET.out	89,063	2020-09-16 17:09:43	2020-09-16 17:09:48	HTTPS Checksum
FAC_3000E-v6-build0542-FORTINET.out	88,708	2020-09-16 17:09:00	2020-09-16 17:09:09	HTTPS Checksum
FAC_400C-v6-build0542-FORTINET.out	88,006	2020-09-16 17:09:48	2020-09-16 17:09:53	HTTPS Checksum
FAC_400E-v6-build0542-FORTINET.out	88,342	2020-09-16 17:09:18	2020-09-16 17:09:23	HTTPS Checksum
FAC_800F-v6-build0542-FORTINET.out	90,907	2020-09-16 17:09:09	2020-09-16 17:09:16	HTTPS Checksum
FAC_VM_AZURE-v6-build0542-FORTINET.out	88,788	2020-09-16 17:09:08	2020-09-16 17:09:15	HTTPS Checksum
FAC_VM_AZURE-v6-build0542-FORTINET.out.azure.zip	88,332	2020-09-16 17:09:19	2020-09-16 17:09:26	HTTPS Checksum
FAC_VM_HV-v6-build0542-FORTINET.out	88,185	2020-09-16 17:09:36	2020-09-16 17:09:42	HTTPS Checksum
FAC_VM_HV-v6-build0542-FORTINET.out.hyperv.zip	87,666	2020-09-16 17:09:16	2020-09-16 17:09:22	HTTPS Checksum
FAC_VM_KVM-v6-build0542-FORTINET.out	88,296	2020-09-16 17:09:59	2020-09-16 17:09:04	HTTPS Checksum
FAC_VM_KVM-v6-build0542-FORTINET.out.kvm.zip	87,672	2020-09-16 17:09:28	2020-09-16 17:09:35	HTTPS Checksum
FAC_VM_OPC-v6-build0542-FORTINET.out	88,264	2020-09-16 17:09:23	2020-09-16 17:09:28	HTTPS Checksum
FAC_VM_OPC-v6-build0542-FORTINET.out.opc.zip	87,641	2020-09-16 17:09:23	2020-09-16 17:09:29	HTTPS Checksum
FAC_VM_XEN-v6-build0542-FORTINET.out	90,540	2020-09-16 17:09:54	2020-09-16 17:09:59	HTTPS Checksum
FAC_VM_XEN-v6-build0542-FORTINET.out.xen.zip	90,008	2020-09-16 17:09:49	2020-09-16 17:09:54	HTTPS Checksum
FAC_VM-v6-build0542-FORTINET.out	89,515	2020-09-16 17:09:04	2020-09-16 17:09:11	HTTPS Checksum
FAC_VM-v6-build0542-FORTINET.out.ovf.zip	88,810	2020-09-16 17:09:42	2020-09-16 17:09:48	HTTPS Checksum
FortiAuthenticator-6.2.0-Release-Notes.pdf	1,318	2020-09-16 17:09:39	2020-11-23 13:11:00	HTTPS Checksum

4. Download the `.ovf.zip` file and FortiAuthenticator Release Notes, and save these files to your management computer. Select the `.zip` file on your management computer and extract the files to a new file folder.

Unlicensed FortiAuthenticator-VM

A FortiAuthenticator-VM is unlicensed until the administrator uploads a Fortinet-issued license file. An unlicensed FortiAuthenticator-VM can be identified by its serial number FAC-VM0000000000 and has a non-expiring five-user limit for small scale evaluation purposes. No activation is required for the unlicensed FortiAuthenticator-VM.

Technical support is not included with the unlicensed FortiAuthenticator-VM.

Please contact your Fortinet Reseller should you require an extended evaluation, i.e. with more users.

FortiAuthenticator-VM Deployment

For best performance, it is recommended that FortiAuthenticator-VM is installed on a “bare metal” hypervisor. Hypervisors that are installed as applications on top of a general purpose operating system (such as Microsoft Windows, Mac OS X, or Linux) will have fewer computing resources available due to the host OS’s own overhead.

The following sections detail deployments for VMware vSphere:

- Deploying FortiAuthenticator-VM on VMware
- Configure FortiAuthenticator-VM hardware settings
- Power on your FortiAuthenticator-VM

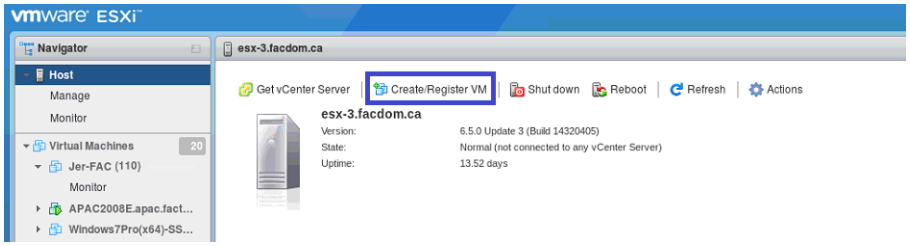
Deploying FortiAuthenticator-VM on VMware

Once you have downloaded the `out.ovf.zip` file and extracted the package contents to a folder on your management computer, you can deploy it into your VMware environment.

To deploy the FortiAuthenticator-VM OVF template:

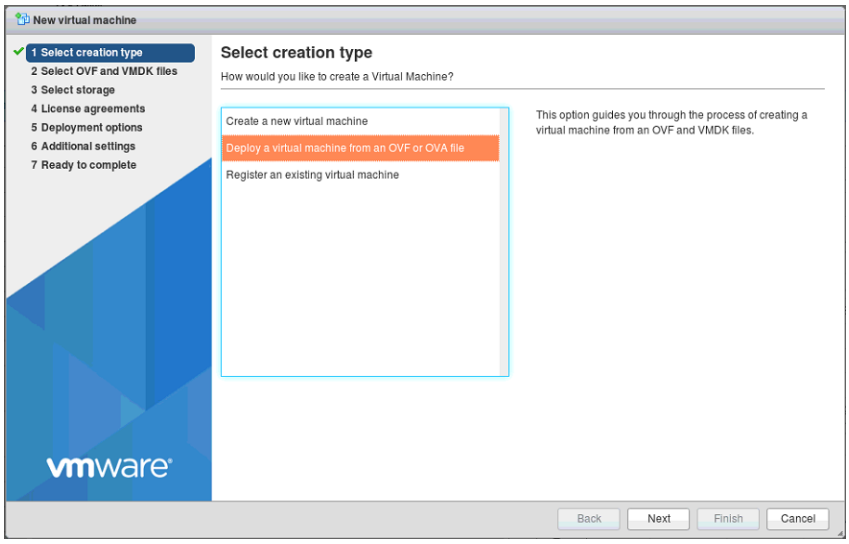
1. Connect to your VMware ESXi server by visiting its URL in your browser. Enter your username and password, and click *Log in*.

2. Select *Create/Register VM*.

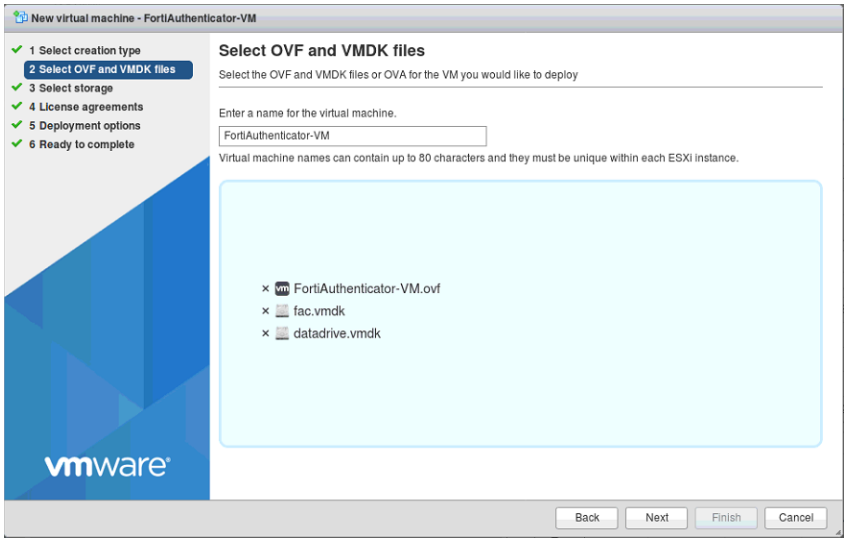


The VM creation wizard opens.

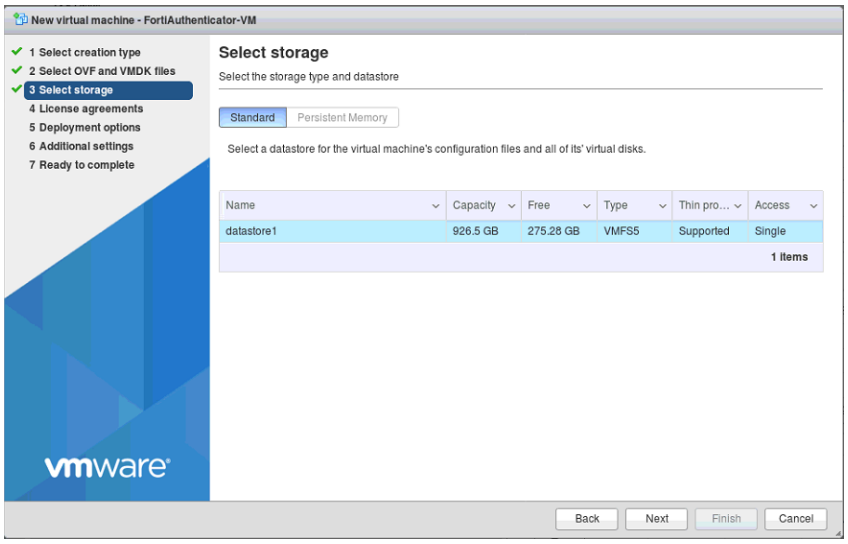
3. Select *Deploy a virtual machine from an OVF or OVA file*, and click *Next*.



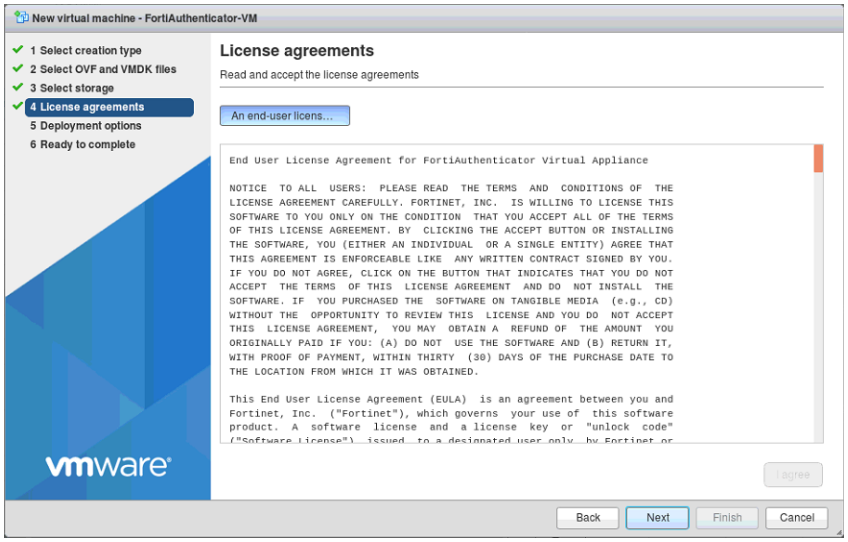
4. Enter a name for your VM and select the OVF (FortiAuthenticator-VM.ovf), firmware VMDK (fac.vmdk), and data storage VMDK (datadrive.vmdk) files previously extracted to your management computer, and click *Next*.



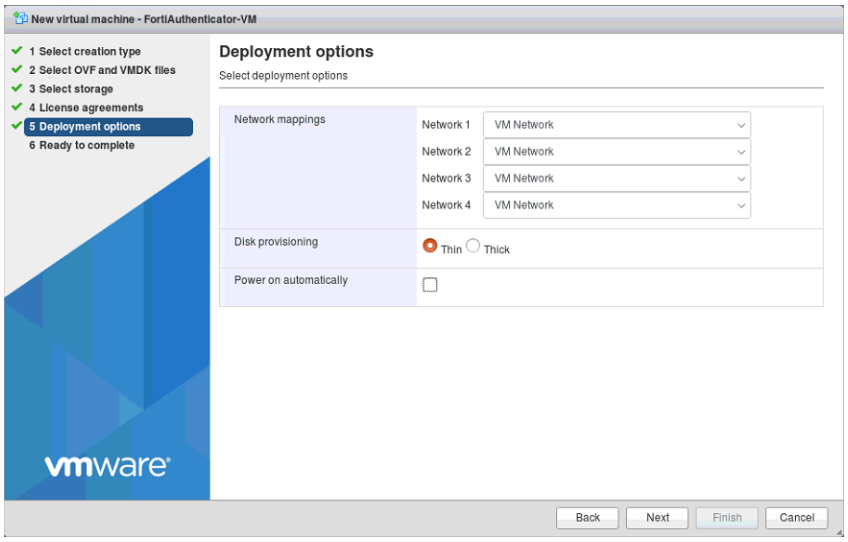
5. Select which ESXi server's datastore to use for the deployment of FortiAuthenticator-VM, and click *Next*.



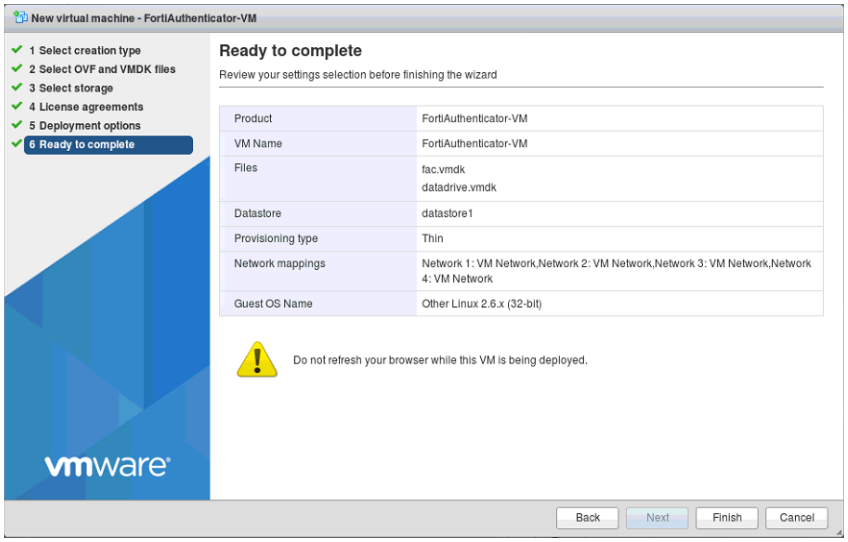
6. Read the licensing terms and click *I agree* and *Next*.



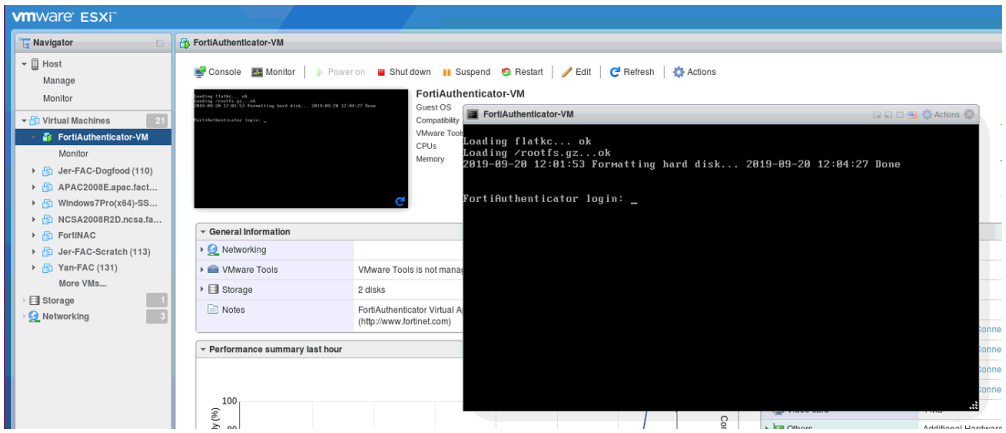
7. Select the appropriate network mappings, disk provisioning, and power on options for your deployment, and click *Next*.
   - **Thin Provision**: This option optimizes storage use at the cost of sub-optimal disk I/O rates. It allocates disk space only when a write occurs to a block, but the total volume size is reported by VMFS to the OS. Other volumes can take the remaining space. This allows you to float between your servers and expand storage when your size monitoring indicates there is a problem.
     Once a Thin Provisioned block is allocated, it remains in the volume regardless of whether you have deleted data, etc...
   - **Thick Provision**: This option has higher storage requirements, but benefits from optimal disk I/O rates. It allocates the disk space statically. No other volumes can take the allocated space.



8. Review the summary of your VM settings, and click *Finish*.



9. Select your newly created VM and launch it.
The VM console will be displayed where you can monitor the booting progress of your FortiAuthenticator-VM.



Configure FortiAuthenticator-VM hardware settings

Before powering on your FortiAuthenticator-VM you must configure the virtual memory, virtual CPU, and virtual disk (VMDK) configuration, and map the virtual network adapters.

These settings cannot be configured inside FortiAuthenticator-VM, and must be configured in the VM environment. Some settings cannot be reconfigured after you power on the virtual appliance.

Resizing the virtual disk (vDisk)

If you configure the virtual appliance's storage repository to be internal (i.e. local, on its own vDisk), resize the vDisk before powering on.

This step is not applicable if the virtual appliance will use external network file system (such as NFS) datastores.

The FortiAuthenticator-VM package that you downloaded includes pre-sized VMDK (Virtual Machine Disk Format) files of 1GB for disk 1 (for the OS) and 60GB for disk 2 data, which is large enough for most small deployments. This can be extended if necessary. Resize the vDisk before powering on the virtual machine.

Before doing so, make sure that you understand the effects of your vDisk settings.

During the creation of a VM datastore, you have the following formatting options:

- 1MB block size - 256GB maximum file size
- 2MB block size - 512GB maximum file size
- 4MB block size – 1,024GB maximum file size
- 8MB block size – 2,048GB maximum file size

These options affect the possible size of each vDisk.

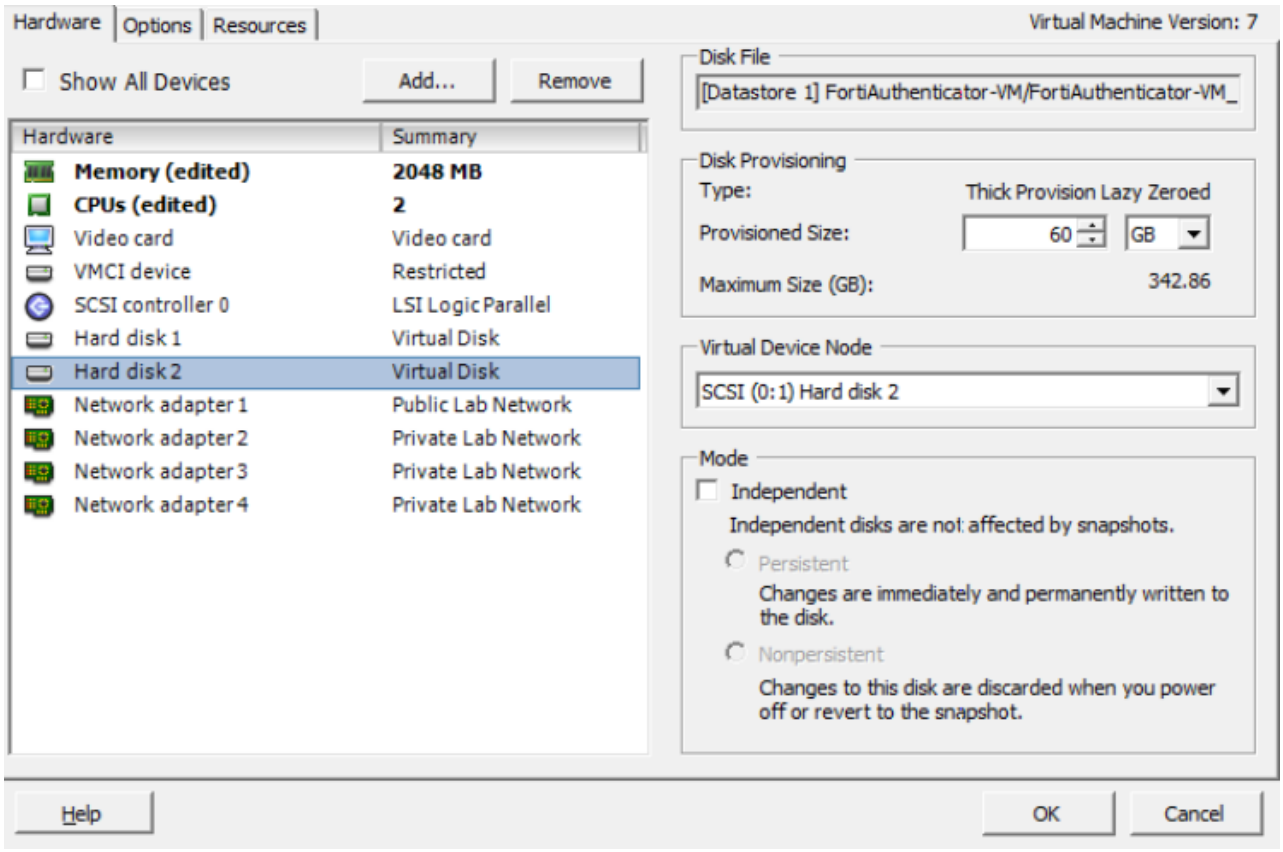
For example, if you have an 800GB datastore which has been formatted with 1MB block size, you cannot size a single vDisk greater than 256GB on your FortiAuthenticator-VM.

Consider also that, depending on the size of your organization's network, you might require more or less storage for the user database and logging.

For more information on vDisk sizing, see http://communities.vmware.com/docs/DOC-11920.

To resize the vDisk:

1. In the VMware vSphere Client, right-click the name of the virtual appliance, and select *Edit Settings*.
   The *Virtual Machine Properties* page is displayed.



2. Select the *Hardware* tab and select *Hard Disk 2*.
3. Select *Remove*.
4. Select *Add*.
   The *Add Hardware* page is displayed.
5. In the list of device types, select *Hard Disk* and select *Next*.
6. Select *Create a new virtual disk* and select *Next*.
7. In *Disk Size*, enter the size of the vDisk in GB and select *Next*.
8. Select the bottom option in *Virtual Device Node*, select *IDE (0:1)* from the drop-down list, then select *Next*.
9. Select *Finish* to close the *Add Hardware* page and then select OK to save the settings to Virtual Machine Properties.

Configuring the number of virtual CPUs (vCPUs)

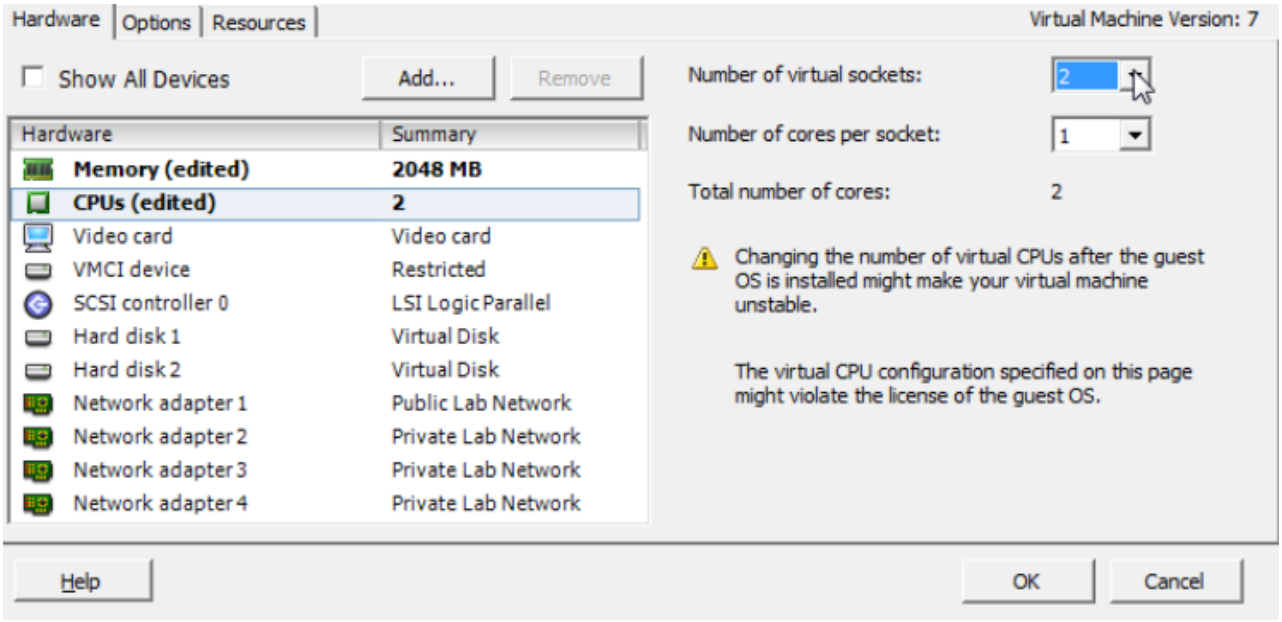
By default, the virtual appliance is configured to use 2 vCPUs. FortiAuthenticator-VM is not restricted to how many vCPUs can be configured so you can increase the number according to your requirements (e.g., you can allocate 2, 4, or 8 vCPUs).

If you need to increase or decrease the vCPUs after the initial boot, power off FortiAuthenticator-VM, adjust the number of vCPUs, then power on the VM.

For more information on vCPUs, visit http://www.vmware.com/products/vsphere-hypervisor/index.html for VMware vSphere documentation.

To change the number of vCPUs:

1. In the VMware vSphere Client, right-click the name of the virtual appliance, and select *Edit Settings*.
   The *Virtual Machine Properties* page is displayed.



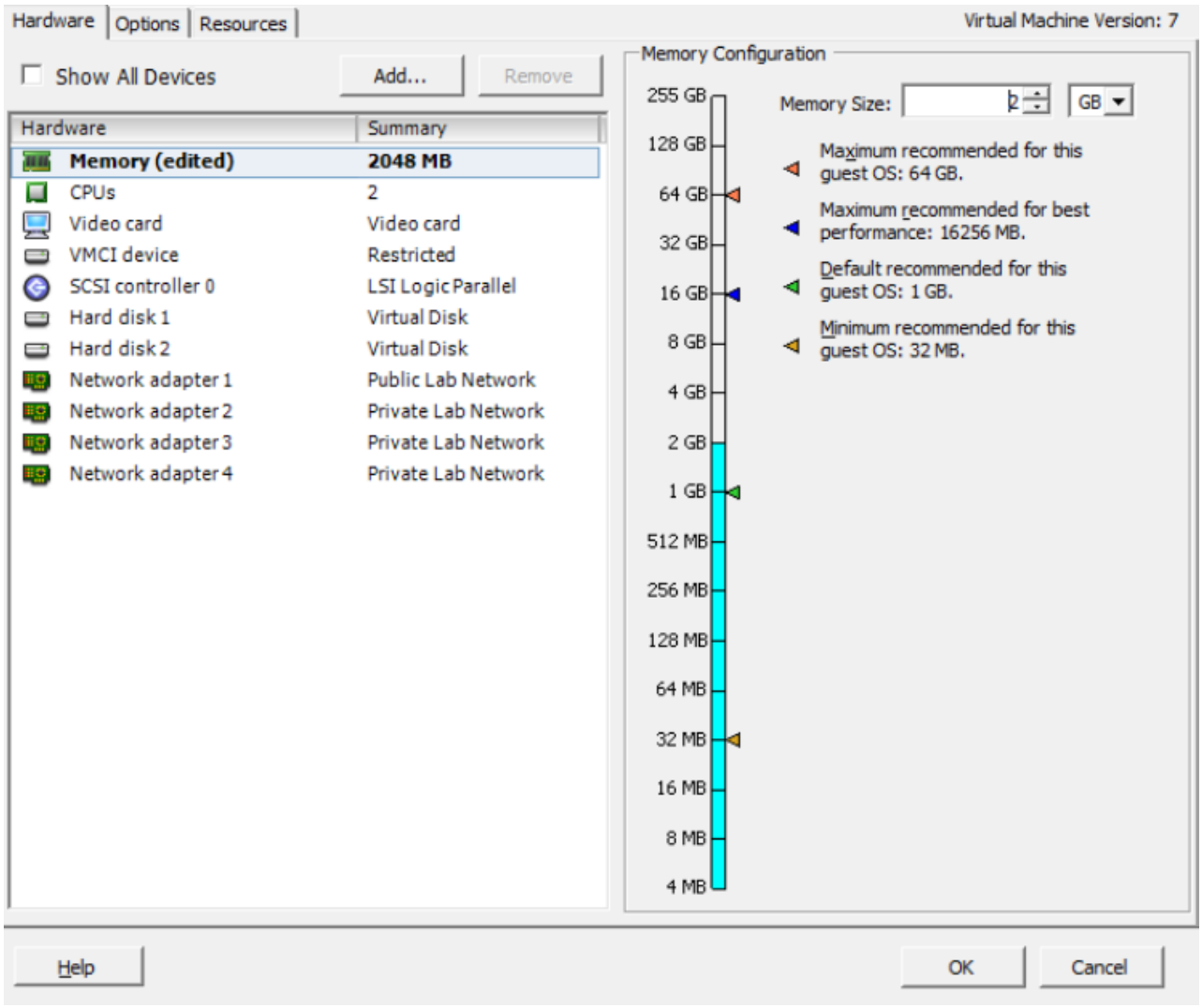
2. Select the *Hardware* tab and select CPUs.
3. Select the number of virtual sockets and the number of cores per socket.
4. Select *OK* to save the settings to Virtual Machines Properties.

Configuring the virtual RAM (vRAM) limit

FortiAuthenticator-VM comes pre-configured to use 512MB of vRAM. You can change this value. The valid range is from 512MB to 16GB.

To change the amount of vRAM:

1. In the VMware vSphere Client, right-click the name of the virtual appliance, and select *Edit Settings*.
   The *Virtual Machine Properties* page is displayed.



2. Select the *Hardware* tab and select *Memory*.
3. Enter the maximum memory in GB to allocate to the VM instance.
4. Select *OK* to save the settings to Virtual Machine Properties.

Mapping the virtual NICs (vNICs) to physical NICs

Appropriate mappings of the FortiAuthenticator-VM ports to physical ports depends on your existing virtual environment. Often, the default bridging vNICs work, and do not need to be changed.

If you are unsure of your network mappings, try bridging first before non-default vNIC modes such as NAT or host-only networks. The default bridging vNIC mappings are appropriate where each of the host's guest virtual machines should have their own IP addresses on your network. The most common exceptions to this rule are for VLANs and the transparent modes.

When you deploy the FortiAuthenticator-VM package, 4 bridging vNICs are created and automatically mapped to a port group on 1 virtual switch (vSwitch) within the hypervisor. Each of those vNICs can be used by one of the 4 network interfaces in FortiAuthenticator-VM.

Alternatively, if you prefer, some or all of the network interfaces may be configured to use the same vNIC. vSwitches are themselves mapped to physical ports on the server.

Example network mapping:

VMware vSphere		FortiAuthenticator-VM	
Physical Network Adapter	**Network Mapping (vSwitch Port Group)**	**Virtual Network Adapter for FAC VM**	**Network Interface Name in GUI and CLI**
eth0	VM Network 0	Management	port1
eth1	VM Network 1	External	port2
eth0	VM Network 2	Internal (LDAP)	port3
eth0	VM Network 1	Unconfigured	port4

To map network adapters:

1. In the VMware vSphere Client, right-click the name of the virtual appliance, and select *Edit Settings*. The *Virtual Machine Properties* page is displayed.
2. Select the *Hardware* tab and select Network adapter 1.
3. From the Network Connection dropdown list, select the virtual network mapping for the virtual network adapter. Repeat this step for the other three network adapters. The correct mapping varies by your virtual environment's network configuration.
4. Select *OK* to save the settings to Virtual Machine Properties.

Power on your FortiAuthenticator-VM

You can now power on your FortiAuthenticator-VM.

Select the name of the FortiAuthenticator-VM you deployed in the inventory list and select *Power on the virtual machine* in the *Getting Started* tab. Optionally, you can select the name of the FortiAuthenticator-VM you deployed, right-click and select *Power* > *Power On*.

Initial Configuration

Before you can connect to the FortiAuthenticator-VM GUI you must configure basic network settings via the console in your client. Once configured, you can connect to the FortiAuthenticator-VM GUI and upload the FortiAuthenticator-VM license file that you downloaded from FortiCloud.

The following topics are included in this section:

FortiAuthenticator-VM console access

To enable GUI access to the FortiAuthenticator-VM you must configure basic network settings of the FortiAuthenticator-VM in the client console.

To configure basic network settings in FortiAuthenticator-VM:

1. Power on your virtual machine, and enter the VM *Console*.
2. At the FortiAuthenticator-VM login prompt enter the username `admin` and password.
   The default password is no password. You will be prompted to create a new password.
3. The default `Port1` IP address is set to `192.168.1.99/24`. You can change this IP address with the following CLI command:

```
config system interface
   edit port1
      set ip <ip-address>/<netmask>
      set allowaccess https-gui https-api ssh
   next
end
config router static
   edit 0
      set device port1
      set dst 0.0.0.0/0
      set gateway <ip-gateway>
   next
end
```

FortiCloud currently does not support IPv6 for FortiAuthenticator-VM license validation. You must specify an IPv4 address in both the support portal and the port1 management interface.

Connect to the FortiAuthenticator-VM GUI

Once you have configured the port1 IP address, network mask, and default gateway, launch a web browser and enter the IP address you configured for port1.

To support HTTPS authentication, the FortiAuthenticator-VM includes a self-signed X.509 certificate, which it presents to clients whenever they initiate an HTTPS connection to the FortiAuthenticator appliance. When you connect, depending on your web browser and prior access of the FortiAuthenticator-VM, your browser might display two security warnings related to this certificate:

The certificate is not automatically trusted because it is self-signed, rather than being signed by a valid certificate authority (CA). Self-signed certificates cannot be verified with a proper CA, and therefore might be fraudulent. You must manually indicate whether or not to trust the certificate. The certificate might belong to another web site. The common name (CN) field in the certificate, which usually contains the host name of the web site, does not exactly match the URL you requested. This could indicate server identity theft, but could also simply indicate that the certificate contains a domain name while you have entered an IP address. You must manually indicate whether this mismatch is normal or not.

Both warnings are normal for the default certificate. TLS v1.0, TLS v1.1, and TLS v1.2 are supported.

Verify and accept the certificate, either permanently (the web browser will not display the self-signing warning again) or temporarily. You cannot log in until you accept the certificate.

For details on accepting the certificate, see the documentation for your web browser.

At the login page, enter the user name *admin* and password and select *Login*. The default password is no password. The GUI will appear with an Evaluation License dialog box.

By default, the GUI is accessible via HTTPS.

Upload the FortiAuthenticator-VM license file

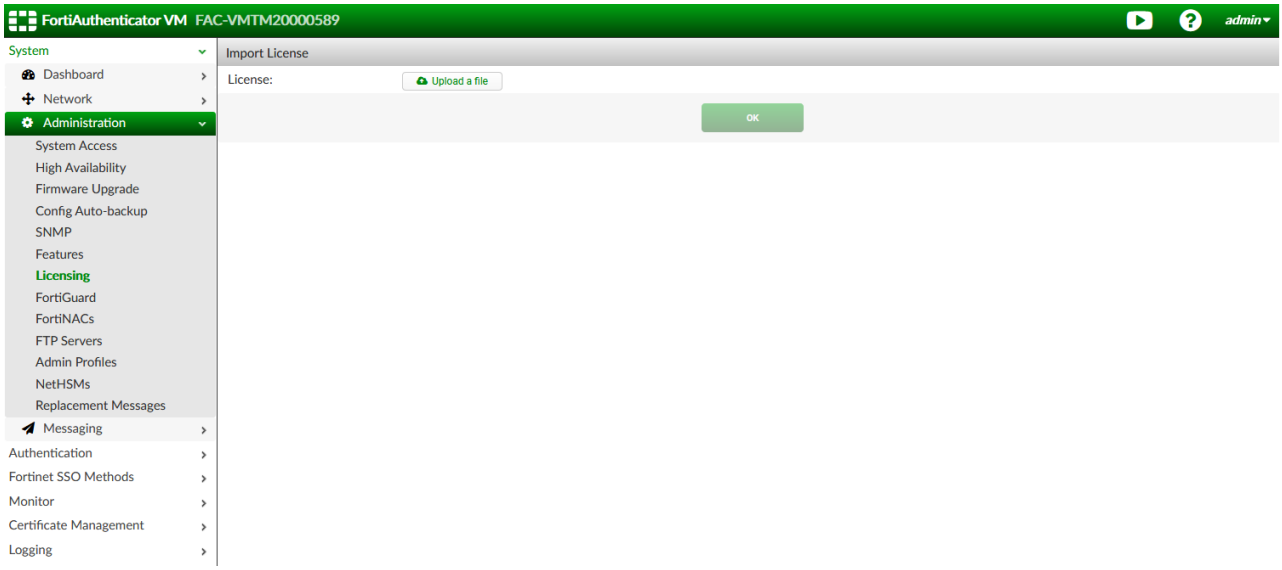
Every FortiAuthenticator-VM includes a five-user evaluation license. During this time the FortiAuthenticator-VM operates in evaluation mode. Before using the FortiAuthenticator-VM you must enter the license file that you downloaded from FortiCloud upon registration.

Plan a maintenance window to apply the FortiAuthenticator-VM license as the VM will reboot.

As your organization grows, you can simply either allocate more resources or migrate your virtual appliance to a physical server with more power, then upgrade your FortiAuthenticator-VM license to support your needs.

To upload the FortiAuthenticator-VM license file:

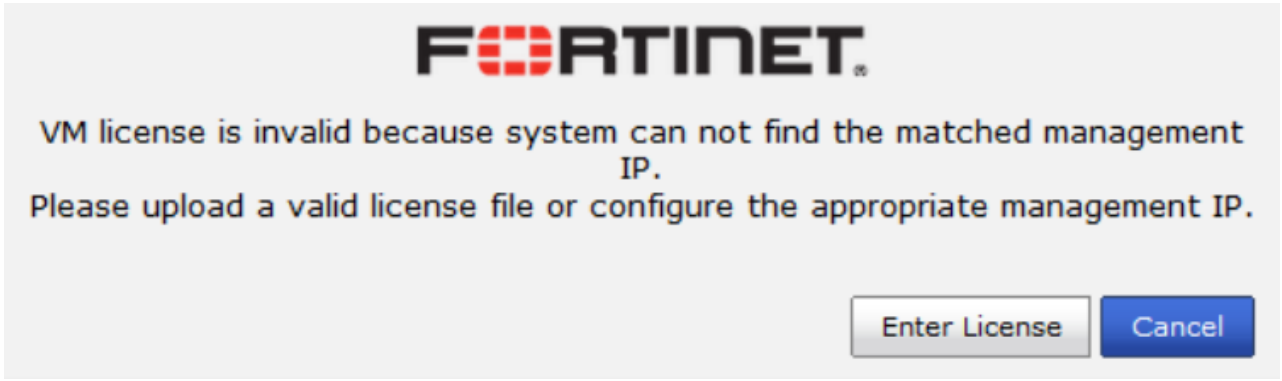
1. Log into the FortiAuthenticator-VM.
2. Go to *System* > *Administration* > *Licensing*.
   The *Import License* page opens.



3. Select *Upload a file* and locate the license file (`.lic`) on your computer. Select *OK* to upload the license file.
4. The VM registration status appears as valid once the license has been validated.

As a part of the license validation process, FortiAuthenticator-VM compares its IP address with the IP information in the license file. If a new license has been imported or the FortiAuthenticator's IP address has been changed, the FortiAuthenticator-VM must be rebooted in order for the system to validate the change and operate with a valid license.

5. If the IP address in the license file and the IP address configured in the FortiAuthenticator-VM do not match, you will receive the following error message dialog box when you log back into the VM.



If this occurs, you will need to change the IP address in FortiCloud to match the management IP and re-download the license file.

After an invalid license file is loaded to FortiAuthenticator-VM, the GUI will be locked until a valid license file is uploaded.

Configure your FortiAuthenticator-VM

Once the FortiAuthenticator-VM license has been validated you can begin to configure your device. For more information on configuring your FortiAuthenticator-VM see the FortiAuthenticator Administration Guide on the Fortinet Document Library.

In VM environments, it is recommended that you use the VMware *Snapshot* utility to backup the VM instance. In the event of an issue with a firmware upgrade or configuration issue, you can use the *Snapshot Manager* to revert the VM instance to a previous *Snapshot*. To create a *Snapshot*, right-click the VM instance and select *Snapshot* > *Take Snapshot*.

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